THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 18

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SERGIO KOSTEK, SHU-KONG CHANG, GORDON McDANIEL, THOMAS PLONA, CURTIS RANDALL, JEAN-PIERRE MASSON, JAMES C. MAYES and KAI HSU

Appeal No. 96-4183
Application 08/235,625[1]

HEARD: April 7, 1997

Before McCANDLISH, Senior Administrative Patent Judge, STAAB and CRAWFORD, Administrative Patent Judges.

CRAWFORD, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal from the examiner's final rejection of claims 7, 10-16 and 19-24, which are all the

[1] Application for patent filed April 29, 1994. According to appellants, this application is a continuation-in-part of application 07/839,969 filed February 20, 1992, which is a continuation-in-part of application 07/548,169 filed July 5, 1990, now abandoned, which is a continuation-in-part of application 07/288,742 filed December 22, 1988, now abandoned.

claims pending in the application. Claims 1-6, 8-9 and 17-18 have been canceled.

Appellants' invention is directed to a method for performing sonic logging while drilling a borehole traversing an earth formation. Claim 7 is illustrative of the claims on appeal and recites:

7. A method for performing sonic logging while drilling a borehole traversing an earth formation, including drilling the borehole with a drill string having a drill bit at its lower end and drilling fluid in the borehole surrounding the drill string, the steps of said method comprising:

a) drilling with a drill collar incorporated into the drill string;

b) transmitting, from a location on said drill collar, acoustic energy into the surrounding earth formations;

c) receiving, at a location on said drill collar, acoustic energy returned from the surrounding earth formations;

d) providing at least one output related to the received acoustic energy, said at least one output comprising a plurality of waveforms; and

e) processing said at least one output to determine at least one characteristic of said earth formations, said processing comprising summing said plurality of waveforms to obtain a resultant stacked waveform.

THE REFERENCE

The following references were relied on by the examiner to support the final rejection:

Ely	2,757,358	July 31, 1956

Moser et al. (Moser)	3,190,388	June 22, 1965
Schuster	3,191,141	June 22, 1965
Cox et al. (Cox)	4,293,936	Oct. 6, 1981
Kent et al. (Kent)	4,302,826	Nov. 24, 1981
Lygas	4,636,999	Jan. 13, 1987
Hoyle et al. (Hoyle)	4,850,450	July 25, 1989
Hsu et al. (Hsu)	4,870,627	Sep. 26, 1989
Brie et al. (Brie)	4,888,740	Dec. 19, 1989

Waters, K.H., Reflection Seismology, pages 195-196, John Wiley and Sons, 1981, TN 269, W37.

THE REJECTION

Claims 7 and 10-16 stand rejected under 35 U.S.C. § 103 "as being unpatentable over Lygas or Kent et al when taken with Lord et al or Cox et al, and Ely (US Patent) and Hoyle et al, or Schuster or Moser et al, and Waters or Brie et al." (Final Rejection at page 2).[2]

[2] By our count, the examiner's uses of the word "or" in the statement of the rejection results in no less than 24 different and distinct possible combinations of references. It is questionable whether this circumstance fulfills the examiner's basic duty to clearly inform applicants of the evidentiary basis of the rejection. In this instance, however, we decline to remand the present application to the examiner for clarification since the explanation of the rejection found in the body of the answer clarifies the manner in which the references are applied to the degree necessary for us to decide the obviousness issues raised in this appeal on the merits.

Claims 7, 10-16 and 19-24 stand rejected under 35 U.S.C. § 103 as being unpatentable over the references as stated above for claims 7 and 10-16 “when taken with Hsu et al” (Final Rejection, page 8).

Rather than reiterate the respective positions of the examiner and the appellants in support of their respective positions, reference is made to the examiner’s answer (Paper No. 14) and the appellants’ brief (Paper No. 13) for the full exposition thereof.

OPINION

We have carefully reviewed the appellants’ invention as described in the specification, the appealed claims, the prior art applied by the examiner, and the respective positions advanced by appellants in the brief and the examiner in the answer. As a consequence of this review, we conclude that the rejections of the examiner should not be sustained.

Independent claim 7 calls for, inter alia, the step of receiving, at a location on the drill collar, acoustic energy returned form the surrounding earth formations.

Considering first the rejection based on the use of Lygas as the primary reference, Lygas discloses a method for performing logging while drilling a borehole traversing an earth formation, including drilling the borehole with a drill string 13

having a drill bit 14 at its lower end and drilling fluid in the borehole surrounding the drill string (Fig. 1; Col. 1, lines 15-18; Col. 3, lines 22-25; Col. 8, line 19). The method steps include drilling with a data handling sub 15 incorporated into the drill string 13. Lygas also discloses that the acoustic signals penetrate the walls of the borehole and enable analysis of sub-terranian formations ahead of the bit and thus at least suggests the presence of a receiver. However, Lygas is silent about the location of the receiver.

The examiner states that measurement of formations ahead of the drill bit is usually accomplished by keeping the adjacent receivers in the data handling sub so as not to be subject to interference by the weathering layer and other strata between the data handling sub and the earth's surface (Answer at page 11). However, the examiner does not have a factual basis for this statement.

A rejection based on 35 U.S.C. § 103 must rest on a factual basis, with the facts being interpreted without hindsight reconstruction of the invention from the prior art. In making this evaluation, the examiner has the initial duty of supplying the factual basis for the rejection he advances. He may not, because he doubts that the invention is patentable, resort to

speculation, unfounded assumptions or hindsight reconstruction to supply deficiencies in the factual basis. See In re Warner, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967).

As such it is the examiner's duty to establish a factual basis for concluding that Lygas teaches or suggests the placement of the receiver in the data handling sub. The examiner has not met this burden. We have reviewed the disclosures of Lord, Cox, Ely, Hoyle, Schuster, Moser, Waters, Brie and Hsu but these references do not cure the deficiencies of Lygas in this regard. For example, while Cox, Ely, Hoyle, Schuster and Moser disclose downhole logging tools which include transmitters and receivers, these references do not disclose tools which are utilized during drilling.

In view of the foregoing, we will not sustain the examiner's rejection of claim 7 as unpatentable under 35 U.S.C. § 103 based on the use of Lygas as the primary reference. As each of the independent method claims recite a step of receiving an acoustic signal at a location on the drill collar and each of the independent apparatus claims recite that the receiver is mounted on a drill collar, we also will not sustain the rejections of claims 10-16 and 19-24 based on Lygas as the primary reference.

We now turn to the rejections of the pending claims based on the use of Kent as the primary reference.

Kent discloses a transducer for coupling an acoustic signal to a borehole drilling string during drilling. A sensor is mounted in the borehole in a sub-unit 38 which is adapted to generate an electrical measure of data relating to the operation of drill bit 40 such as fluid pressure or temperature (Col. 3, lines 7-10). The output from this sensor modulates an acoustic transmitter and the resultant acoustic wave is propagated toward the earth's surface along the drill string 35 (Col. 3, lines 6-28) where it is received by a receiver mounted in a sub unit 32 at the earth's surface. As such Kent does not disclose the steps of both transmitting signals and receiving signals at the drill collar, as recited in claim 7.

The examiner argues, in effect, that although Kent depicts the transmitter 37 and receiver 32 mounted at the earth's surface, this does not detract from the teaching of mounting receivers on drill collars for receiving acoustic energy. (Answer at page 11). The examiner has presented no convincing argument why this is so, and none is apparent to us. Clearly, Kent does not disclose, teach or suggest both transmitting signals and receiving signals at the collar. We have again

reviewed the disclosures of Lord, Cox, Ely, Hoyle, Schuster, Moser, Waters, Brie and Hsu as they relate to Kent, but have found nothing in these references that would have motivated a person of ordinary skill in the art to modify the apparatus disclosed in Kent so that the receiving step takes place at the drill collar, where the transmitting step takes place. Therefore, we will not sustain the rejections of claim 7 as unpatentable under 35 U.S.C. § 103 based on the use of Kent as the primary reference. As each of the independent method claims recite a step of receiving an emitted acoustic signal at a location on the drill collar and each of the independent apparatus claims recite that the receiver is mounted on a drill collar, we also will not sustain the rejections as to claims 10-16 and 19-24 based on the use of Kent as the primary reference.

The decision of the examiner is reversed.

Appeal No. 96-4183
Application 08/235,625

REVERSED

HARRISON E. McCANDLISH, Senior Administrative Patent Judge	
LAWRENCE J. STAAB Administrative Patent Judge	BOARD OF PATENT APPEALS AND INTERFERENCES
MURRIEL E. CRAWFORD Administrative Patent Judge	

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